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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,513	12/19/2000	Kiyoto Takizawa	AK-339XX	5149

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WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES LLP
Ten Post Office Square
Boston, MA 02109

EXAMINER

KERNS, KEVIN P

ART UNIT	PAPER NUMBER
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1725

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DATE MAILED: 03/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09 740 513

Applicant(s)

TAKIZAWA ET AL

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If no period for reply is specified above, the maximum statutory period will apply, and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed in view of an earned patent term adjustment (See 37 CFR 1.134),

Status

- 1) ☐ Responsive to communication(s) filed on 04 March 2002
- 2a) ☐ This action is **FINAL** 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-7 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on 04 March 2002 is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some c) ☐ None of.
 - 1. ☐ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1. ☐ Notice of References Cited (PTO-892)
- 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3. ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4. ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5. ☐ Notice of Informal Patent Application (PTO-152)
- 6. ☐ Other _____

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In the amended abstract (paper #6) of March 4, 2002, the legal term "means" should be removed from the text, and the abstract should also be on a separate sheet.

Claim Objections

2. Claims 4 and 5 (as amended) are objected to because of the following informalities: in claim 4, 4th line from the bottom of the claim, a comma should be added after "cylinder". In claim 5, line 4, "a supporting legs" should be changed to either "supporting legs" or "a supporting leg". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to amended claim 1 (line 13), it has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. (US 5,040,589) in view of Kono (US 5,983,976), and further in view of Kono (US 5,836,372).

Bradley et al. disclose a method and apparatus for injection molding of metal alloys in which the injection molding (weighing) chamber includes a rotatable screw for injecting a metered amount of material into a mold (metering chamber), a hydraulic driving means with a coupler (tie-bar), a sprue (gate), a support platform, clamping means, heating means surrounding the screw chamber, a nozzle member within a tip portion, and a non-return valve assembly (seal ring) to prevent backflow of material (abstract: column 2, lines 21-30; column 3, lines 21-34 and 59-68; column 4, lines 1-39; column 7, lines 48-64; column 9, lines 29-53; and Figures 1 and 3). An injection molding screw (with screw flights, or projected portions, around the screw axis with a clearance for sliding) rotates and translates within a heating chamber, and a feeding means (hopper 11) introduces a metered amount of (granular) metal alloy material into the rear portion of the screw chamber (positioned in front of the feeding opening), wherein the metal material is heated in a heating cylinder (via resistance heaters) and

subsequently injected in the molten state at the foremost portion of the screw (abstract, column 3, lines 10-54; column 4, lines 12-39; column 5, lines 62-68; column 6, lines 1-3; column 7, lines 3-11; column 9, lines 29-53; and Figures 1, 3, and 4). Bradley et al. do not teach inclined positioning of the apparatus.

However, Kono ('976) disclose an injection molding system that includes a feeder, a desired (metered) amount of molten (liquid) metal flowing in an inclined chamber, a plunger (ram) within a barrel, or chamber, and a piston that creates a negative pressure in the chamber (abstract, column 2, lines 59-67; column 3, lines 1-34; and Figures 1, 2, 8, and 10-12). These features are advantageous for the purpose of obtaining precise control of injection volume and reduction of injection cycle time (column 3, lines 9-34).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the injection molding apparatus and method disclosed by Bradley et al., by using the inclined chamber of the injection molding apparatus of Kono ('976), in order to obtain precise control of the injection volume and reduce the injection cycle time (Kono '976; column 3, lines 9-34).

Bradley and Kono ('976) disclose all elements of claim 1 above, with the exception of the agitating member with agitating wings.

However, Kono ('372) discloses an injection molding system that includes feeding means, a heating cylinder, and a pair of mixers with stirrer motors, or agitating means with wings (abstract, column 2, lines 26-34; column 3, lines 10-23 and 42-50;

column 4, lines 27-46; and Figures 1-4). These stirrers (agitating means) are advantageous for the purpose of evenly distributing the heat from the heating elements, and assuring that the ratio of solid and liquid is consistent throughout the thixotropic metal alloy material (column 3, lines 21-23 and 45-50).

It would have been obvious to one of ordinary skill in the art to modify the injection molding machines of Bradley et al. (in view of Kono '976) by adding the stirrers disclosed by Kono ('372), in order to evenly distribute heat from the heating elements, and assure that the ratio of solid and liquid is consistent throughout the thixotropic metal alloy material (Kono '372, column 3, lines 21-23 and 45-50).

Response to Arguments

9. The examiner acknowledges the applicants' amendment (paper #6), drawing corrections (paper #7), and terminal disclaimer (paper #8), all of which were received by the USPTO on March 4, 2002. The applicants have correctly submitted red-lined drawings to Figures 1 and 2 (not Figure 3 as inadvertently stated on the proposed drawing change sheet of paper #7). The applicants' amendment (paper #6) has overcome prior objections to the specification, claims, as well as prior claim rejections under 35 USC 112, 2nd paragraph. It is noted that the applicants' amendments have introduced new objections and rejections (see paragraphs 1-4 above). Claims 1-7, all of which have been amended in paper #6, remain pending in the application.

10. Applicant's arguments filed March 4, 2002, have been fully considered but they are not persuasive.

With regard to the applicants' discussion and arguments on pages 16-19 of the amendment of March 4, 2002, the applicants argue essentially one main issue: the combination of references cited under 35 USC 103(a) do not suggest the teachings of the applicants' claims, due to the presence of different metal states (thixotropic versus liquid) in the references. The examiner respectfully disagrees with this assessment. First, all the references of record disclose processes and apparatuses that are in identical fields (injection molding of molten or semi-solid metal materials, the machines of which can also be applied to plastics/polymers as well, as one of ordinary skill in the art would recognize). Second, the structures within each of the apparatuses contain heaters for controlling temperature to select between liquid and thixotropic states, in which such temperature variations are disclosed in all cited references. Third, the thixotropic state has liquid flow properties that apply whether or not certain structures (such as an extruding screw or an inclined chamber/mold) are present, such that "self-weight" (gravity) flowing down inclined angles applies to both states. The three references cited under 35 USC 103(a) include the following structures on an injection molding machine for metallic materials: a feeder, molten/semi-solid metal holder, heaters, and a plunger. In a secondary issue raised by the applicants regarding the number of chambers (page 19), it is noted that only a weighing chamber is distinctly claimed by the applicants, and this structure is present on the injection molding machines in the 35 USC 103(a) references. The Kono ('372) apparatus contains

stirrers (agitating means), which are advantageous for the purpose of evenly distributing the heat from the heating elements, and assuring that the ratio of solid and liquid is consistent throughout the thixotropic metal alloy material (Kono--'372; column 3, lines 21-23 and 45-50). In light of the above discussion, it is respectfully asserted that one of ordinary skill in the art would not be deterred from combining Kono ('372) with the teachings of Bradley et al. in view of Kono ('976), to arrive at the applicants' claimed invention, as all three references are directed to injection molding machines for metallic materials.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (703) 305-3472. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KPK

kpk

March 25, 2002

M. ALEXANDRA ELVE
PRIMARY EXAMINER